PHILOSOPHY AND MEDICINE IN JOHN PHILOPONUS' COMMENTARY ON ARISTOTLE'S *DE ANIMA*

ROBERT B. TODD

John Philoponus' commentary on Aristotle's *De anima* was probably written in Alexandria in the first quarter of the sixth century, and was paraphrased seven centuries later by Sophonias.[1] It is allegedly an edition of the lectures of the neoplatonic philosopher Ammonius, a pupil of Proclus, on Books I and II of the *De anima* (that on Book III is no longer extant in Greek).[2] At least the title in one manuscript indicates this and refers to supplements by Philoponus himself, but it is difficult to determine whether the medical material to be discussed here could be part of such an accretion. I shall follow convention and refer to the author of the whole commentary as "Philoponus,"[3] and comment later on the possible sources of his and Ammonius' medical knowledge. This work deserves the attention of historians of ancient and Byzantine medicine as the best extant example of a Greek philosophical commentary employing medical ideas. Although this characteristic must in some way be connected with the status of medicine in the educational system of the fifth and sixth centuries, I have not been able to establish any firm links between my evidence and that wider context; I shall therefore concentrate for the most part on an analysis of the relevant texts as perhaps a preliminary to further research.

[The reader is referred to the list of abbreviations at the end of the volume.]

Note on References: The Greek Aristotelian commentators are cited by the page and line number of the *Commentaria in Aristotelem Graeca* (Berlin, 1883–1907), hereafter CAG, and the title of the relevant *Aristotelian* work. References to Galen will usually be to Kühn's edition (Leipzig, 1821–1833), with later editions cited as appropriate.

[1] Philoponus' commentary is at CAG XV, ed. M. Hayduck (Berlin, 1897); Sophonias' paraphrase at CAG XXIII:1, ed. M. Hayduck (Berlin, 1883). This commentary had also been used by Michael Psellus (see Hayduck's edition of Philoponus at pp. xiv–xix) while Gennadius Scholarius claimed that St. Thomas' commentary on Aristotle's *De anima* was dependent on Philoponus; see *Oeuvres complètes de Gennade Scholarios* (Paris, 1933), VI, 327.

[2] Book III of the Philoponus commentary is attributed to Stephanus of Alexandria; on its relation to the commentary on the preceding books see H. Blumenthal, "John Philoponus and Stephanus of Alexandria: Two Neoplatonic Christian Commentators on Aristotle?," chap. 6 of *Neoplatonism and Christian Thought*, ed. D. J. O'Meara, Studies in Neoplatonism Ancient and Modern, III (Norfolk, Virginia, 1982). This article also contains references to further secondary literature on this commentary. The medieval Latin translation of Philoponus' commentary on *De anima* III.4–8 is edited by G. Verbeke at *Corpus Latinum Commentariorum in Aristotelem Graecorum III* (Louvain/Paris, 1966).

[3] On the relation between Philoponus and Ammonius see the literature cited at p. 152, notes 5–8 of my article, "Some Concepts in Physical Theory in John Philoponus' Aristotelian Commentaries," *Archiv für Begriffsgeschichte*, 24 (1980), 151–70. The reference to Ammonius' lectures occurs in the titles of Par. Gr. 1914 (s. xii), and of the first edition of 1535. The question is whether this evidence can outweigh a Byzantine tradition (cf. note 1 above) regarding Philoponus as the sole author.

[4] See my "Galenic Medical Ideas in the Greek Aristotelian Commentators," *SOsl*, 52 (1976), 117–34 (hereafter "Galenic Medical Ideas").

[5] See L. G. Westerink, "Philosophy and Medicine in Late Antiquity," *Janus*, 51 (1964), 169–77 (= *Texts and Studies in Neoplatonism and Byzantine Literature* [Amsterdam, 1980], 83–99). See also his *Pseudo-Elias (Pseudo-David), Lectures on Porphyry's Isagoge* (Amsterdam, 1967), pp. xiii–xv, and *The Greek Commentaries on Plato's Phaedo*, Vol. I, *Olympiodorus* (Amsterdam, 1976), 27.

I. PHILOPONUS AND THE RELATION BETWEEN PHILOSOPHY AND MEDICINE IN GREEK ARISTOTELIANISM

Our text is one of numerous Greek and Byzantine Aristotelian commentaries. The Aristotelian treatises that received most attention in this exegetical tradition were those on logic, physics, metaphysics, and psychology, and references to medical writers and medical ideas can be detected in many of them.[4] As Westerink's studies of sixth-century exegesis have also shown, such references can be used to demonstrate a growing professional overlap between philosophy and medicine.[5] But where

Aristotle's *De anima* and parts of his *De generatione et corruptione* are concerned, a commentator's knowledge of medical ideas can significantly affect the actual content of interpretation when it touches on such issues as the theory of nutrition, the operation of the senses, or indeed on the general theory of the soul.[6] Although Aristotle's more medically relevant biological and zoological treatises were known in antiquity, they were not made the subject of commentaries until Michael of Ephesus' work in the eleventh century; but while this Byzantine scholar had some knowledge of Galen, he did not examine medical ideas very closely, nor did he use them to reconstruct Aristotelian thought.[7]

It is, however, just this kind of exercise that occupies John Philoponus in parts of his commentary on the *De anima*. In comparison with the treatment of the same work by his predecessors Alexander of Aphrodisias, who had a fairly extensive knowledge of Galen's works,[8] and Themistius,[9] and by his contemporary Simplicius,[10] Philoponus' commentary shows greater knowledge of medical thought and greater sensitivity to its philosophical implications. This is partly because it is written from a neoplatonic perspective.[11] Plato and Galen could therefore, for example, be followed in their accounts of the primacy of the brain over the heart, and the Galenic anatomy of the brain and doctrine of psychic pneuma could, as we shall see, be introduced to redescribe Aristotlelian accounts of sensation (see Part II below). At the same time, neoplatonic philosophy could be contrasted with a materialistic explanation of the soul and its faculties offered by medical thought, and of this too we shall see some striking examples (Part III below).

But we can also ask whether Philoponus' interest in medicine arose solely within neoplatonism, or whether it depended on the external sustenance of a system of medical education. Unfortunately, we know very little about the neoplatonists' knowledge of Galen in the fifth century; we do not have Proclus' commentary on the biological parts of the *Timaeus*,[12] and the medical references in the commentaries assigned exclusively to Ammonius are too scanty to be decisive.[13] As for Philoponus', or Ammonius', links with contemporary medical teaching, these are difficult to establish, particularly since the Arabic tradition that Philoponus was a medical commentator is so questionable.[14] Also, professionally he was not a doctor, or philosopher, but a γραμματικός, and his philosophical commentaries show none of the stylized form that marks both medical and philosophical exegesis later in the sixth century, including indeed the commentary on Book III of the *De anima* by a Stephanus (possibly himself a medical author) that completes Philoponus' commentary in the Greek manuscripts.[15]

If we turn to the evidence of the text, we find

[6] See "Galenic Medical Ideas," *passim*.

[7] Michael's commentaries on the *De partibus animalium*, *De motu animalium*, and *De incessu animalium* are at CAG XII:2, ed. M. Hayduck (Berlin, 1904). His commentary on the *De generatione animalium*, falsely attributed to Philoponus, is at CAG XIV:3, ed. M. Hayduck (Berlin, 1903). On the historical context of these commentaries see R. Browning, "An Unpublished Funeral Oration on Anna Comnena," *Proceedings of the Cambridge Philological Society*, n.s. 8 (1962), 1–12, and more recently A. Preus, *Aristotle and Michael of Ephesus on the Movement and Progression of Animals* (Hildesheim and New York, 1981). I have discussed some of Michael's Galenic references at "Galenic Medical Ideas," 117–18, and 126–27. As evidence of Michael's orthodoxy, cf. *De gen. an.* 223.12–17, *De part. an.* 44.20 ff. and *De mot. an.* 123.6–14, all of which accept the heart as the central organ (ἡγεμονικόν) of the soul; in the case of the latter, reference is made to Alexander of Aphrodisias' discussion of this topic, an indication of Michael's dependency on orthodoxy. On the latter see further P. L. Donini, "Il *de anima* di Alessandro di Afrodisia e Michele Efesio," *Rivista di Filologia e Istruzione Classica*, 96 (1968), 316–23.

[8] See "Galenic Medical Ideas," 121–23. Extant in Arabic, for example, is Alexander's polemic against Galen on motion: see N. Rescher and M. Marmura, *The Refutation by Alexander of Aphrodisias of Galen's Treatise on the Theory of Motion* (Islamabad, 1965). Alexander's commentary on Aristotle's *De anima* is not extant, only his interpretative essay *de anima*, at *Supplementum Aristotelicum*, II.2, ed. I. Bruns (Berlin, 1892).

[9] I have not been able to identify any specifically medical ideas in Themistius' commentary, at CAG V:3, ed. R. Heinze (Berlin, 1899). He does, however, refer to Galen regarding points of physical theory; cf. *Phys.*, CAG V:2, ed. H. Schenkl (Berlin, 1900), 114.9–115.12, 144.24–145.2, 149.4.

[10] Simplicius' commentary is at CAG XI, ed. M. Hayduck (Berlin, 1882). Its authorship has been questioned; on this and the general doctrine of the work see H. J. Blumenthal, "The Psychology of (?) Simplicius' Commentary on the *De anima*," at 73–93 of *Soul and the Structure of Being in Late Neoplatonism*, ed. H. J. Blumenthal and A. C. Lloyd (Liverpool, 1982).

[11] See Blumenthal's article cited in note 1 above, and on the general issue of the neoplatonists' reading of Aristotle see the same author's "Neoplatonic Elements in the *De Anima* Commentaries," *Phronesis*, 19 (1976), 64–87.

[12] The commentary ends at *Timaeus* 44d. On Proclus' one reference to Galen see note 70 below. Marinus, *Vita Procli* (p. 14 Boissonade) mentions that Proclus had some medical skill.

[13] See note 26 below for one example. Otherwise he just makes the standard complaint about Galen's prolixity at *In Porph. Isag.*, CAG IV:3, ed. A. Busse (Berlin, 1891), 38.15.

[14] On his identification with John of Alexandria see the discussion, and catalogue of manuscripts, in Ullmann, *Medizin*, 89–91, with the literature cited there.

[15] See Westerink (note 5 above), 171. On such methods in medical commentaries see O. Temkin, "Studies on Late Alexandrian Medicine, I. Alexandrian Commentaries on Galen's *De Sectis ad introducendos*," *BHM*, 3 (1935), 405–30 (= Temkin, *Double Face of Janus*, 178–97). On the complex question of this Stephanus' identity see R. Vancourt, *Les Derniers Commentateurs d'Aristote* (Lille, 1944), 26–33.

that Philoponus is generally more interested in the principles behind medical ideas and theories than in their specific details. Though this is what we might expect from a philosopher, we are on safer ground in probing this evidence as it stands than in trying to speculate about the immediate sources of his medical knowledge. The situation can be well illustrated by noting that while the medical references in Philoponus' commentary on the *De anima* are certainly Galenic, this commentator never refers in that work to Galen by name; elsewhere, in his treatise *De aeternitate mundi*, he mentions briefly the works *De locis affectis* and *On Demonstration*.[16] If he bothers to preface his introduction of medical ideas at all, it is with a generic reference to "the doctors" (οἱ ἰατροί).[17] It is in fact in this way that he introduces references to the titles of two Galenic treatises, mentioning the doctors' view "that the faculties of the soul follow the temperaments of the body,"[18] and their "discourses concerning the use of parts."[19] This type of reference, coupled with the simplicity shown in anatomical descriptions when compared with the relevant Galenic precedents,[20] makes it difficult to speculate constructively about whether Philoponus has epitomized medical literature himself, or whether he is drawing on some tradition that had fashioned Galenic ideas into the doxographical form in which we encounter them in this commentary. This is the philological analogue to the difficulties already noted in establishing any historical context for Philoponus' knowledge of medicine.

Philoponus does, however, allow us to approach his medical interests from another perspective by his occasional programmatic statements about the role of the doctor, or the status of the medical art. In discussing various Aristotelian passages dealing directly with this subject, or, as in the *Posterior Analytics*, with the relationship between different sciences, Philoponus regularly categorizes medicine as an applied art, often said to be drawing its principles from φυσιολογία. It is said, for example, to be concerned with the balance between the elements and not with the forms of the elements.[21] Indeed in some passages from the commentary on the *Physics* the doctor, *qua* doctor, is explicitly denied any philosophical identity and is represented as unconcerned with the concepts of primary matter and form, or with teleology.[22] If this evidence were taken as a projection of a professional reality then it would seem that Philoponus regarded medicine and philosophy as radically distinct disciplines. But it is best to use this account of medicine simply as a guide to his use of medical ideas, and in this respect it can be said in broad terms to underwrite his procedure. His anatomical and physiological supplements to the Aristotelian text use essentially factual material, the evidence of a first-order discipline, while it is just such material that is elsewhere set in the wider context of neoplatonic philosophy. These two aspects of his use of medical ideas will concern us in the rest of this paper.

The first reflects the purely exegetical goal of the commentary, in which neoplatonism is a general influence licensing the introduction of Galenic material that restates, and even supports, Aristotelian ideas without radically altering them. The second aspect represents the deeper effect of neoplatonism on Philoponus' commentary, and involves its confrontation with medical ideas occasioned by the Aristotelian text. The two overlap, of course, but it will be useful for us to keep them apart.

[16] *De aet. mund.* 319.5–8 Rabe: the reference is specifically to a view expressed ἐν τῇ διαγνωστικῇ; as John Duffy has pointed out, I was wrong (at "Galenic Medical Ideas," 134, note 2: Addendum) to claim that this title was in any way vague. This formula is typical in Alexandrian medicine; Duffy cites Palladius, *On Epidemics Bk. VI*, 14.30, 129.6, 186.8 Dietz. The reference to the ἀποδεικτικὴ πραγματεία in laudatory terms is at *De aet. mund.* 600.2 Rabe; cf. O. Temkin, "Byzantine Medicine: Tradition and Empiricism," *DOP*, 16 (1962), 97–115 (= *Double Face of Janus*, chap. 14), at 105 note 58. Hippocrates, it should also be noted, is not mentioned by name, though cf. 284.11–12 and 112.26 for references to his works.

[17] To the nine references given in the index for the commentary on Bks. I and II, add 33.2.

[18] *De an.* 50.30–31: ἔνθεν οἱ ἰατροί φασιν ἕπεσθαι ταῖς κράσεσι τοῦ σώματος τὰς τῆς ψυχῆς δυνάμεις. Cf. 51.13–14, 51.30–31; at 51.16, 21, 28 and 33 ὁρμή or ὁρμαί is substituted for δυνάμεις. πάθη (mentioned in the Aristotelian text being discussed, 403a 16) are also referred to in this context. The Galenic treatise is ὅτι ταῖς τοῦ σώματος κράσεσιν αἱ τῆς ψυχῆς δυνάμεις ἕπονται (*Quod animi mores corporis temperamenta sequantur*) at IV 767–822K; ed. I. Muller (Leipzig, 1891) (= *Galeni Scripta Minora*, II). Cf. Pt. III below for further discussion of this topic.

[19] *De an.* 274.8–9: δηλοῦσι δὲ καὶ αἱ περὶ χρείας μορίων τῶν ἰατρῶν πραγματεῖαι ὅτι οὐδὲ τὸ ἐλάχιστον ἔργον τῆς φύσεως μάτην ἐστίν, ἀλλ' ἕνεκά του. The καί links this with a general reference to Aristotle's *Physics*.

[20] Cf. Pt. II below for examples of this.

[21] E.g., *De an.* 23.21–23, 57.9–11; *Anal. post.*, at CAG XIII:3, ed. M. Wallies (Berlin, 1909), 34.24–35.1, 146.17–25; cf. 100.25–31. Cf. earlier, and more briefly, Themistius, *Anal. post.*, CAG V:1, ed. M. Wallies (Berlin, 1900), 25.25. Aristotle, however, envisages a certain type of doctor being a φυσικός; cf. *De sensu*, 436a 17–436b 1 and *De resp.*, 480b 23–30.

[22] *Phys.*, at CAG XVI, ed. H. Vitelli (Berlin, 1887), 232.27–30, 240.11–15. Cf. Galen, *Anat. adm.*, II.2, II.286K (= Galen, *Procedures* [trans. Singer], 31–32), for a classification of different approaches to the study of nature in terms of their theoretical or practical aspects. As with Philoponus, the study of nature in order to show that it has a purpose is distinguished from the applied art of medicine.

II. Philoponus, Aristotle, and Medical Ideas

We can introduce the first group of examples with a case reflecting a common philosophical ground between Philoponus, Aristotle, and Galen. The ubiquitous Aristotelian principle that nature does nothing in vain naturally met with a neoplatonic commentator's approval, and it was with reference to it that he cited the doctors' discussion of the use of parts mentioned earlier.[23] In other contexts he goes further and introduces Galenic anatomical detail as evidence of the natural teleology that Aristotle identifies. He thus praises nature's protection of the ear and eye by giving (non-Aristotelian) accounts of the acoustic nerve, and of the lens, aqueous humor, and cornea.[24] Again, in the course of elaborating Aristotle's claim[25] that breath exists both to maintain internal heat, and for the purpose of speech, which involves "living well" (εὖ ζῆν), he identifies the pharynx, larynx, trachea, and the three associated cartilages.[26] This can be regarded as a simplified version of Galen's account at *De usu partium* VII.11,[27] but set in a context dominated, like that treatise, by a philosophical concern with natural teleology.

In our other examples medical data accord with the more strictly factual matters that Philoponus saw as the concern of the medical art. They mostly involve the operation of the faculties associated with the brain, heart, and liver. The liver is identified, contrary to Aristotle but following Galen, as the source of blood; indeed in passages from the commentary on the *De generatione et corruptione* that I have examined elsewhere we find Philoponus assimilating the principles of Galen's account of digestion and nutrition as a supplement to Aristotle's account of nutrition in Book I chapter 5 of that treatise.[28] Since the heart is not of great significance in the psychology of Aristotle's *De anima* it is not discussed much in Philoponus' commentary, and it is only in another work that he shows knowledge of the Galenic vital pneuma being generated in the heart.[29] As the locus of the sensory faculties the brain was regarded as the central organ of the body, and Philoponus quotes medical evidence in support of this view that recalls some Galenic texts. He refers to the application to the brain of the instrument called the μηνιγγοφύλαξ that was used in trepanning, and its having the effect of rendering an animal immobile and without sensation,[30] but notes that where the spine was injured or "bound" only the lower part of the body was affected while the upper part continued to function.[31] The latter case may be a distant reference to Galen's descriptions of transverse incisions of the spine.[32]

Close attention is given to the anatomy of the eye and the mechanism of vision.[33] Of the tunics of the eye the cornea (ὁ κερατοειδής), and the iris and choroid membrane (ὁ ῥαγοειδής) are named along with the crystalline moisture (τὸ κρυσταλλοειδές—the lens) and the aqueous humor (τὸ ὑοειδές).[34] Vision is said to occur through the optical pneuma passing along the optic nerve and reaching the crystalline body (the lens) where, as Philoponus says, "it has its terminations" and where "the discrimination of sense objects occurs."[35] This account differs in one important respect from Galen's, in that there is no extramission of the optical pneuma into the surrounding air.[36] This is rejected partly on the grounds that such a theory of vision would involve material light rays, an explanation that Philoponus

[23] Cf. note 19 above.

[24] *De an.* 364.15–32 (on the ear), and 364.32–365.2 (on the eye); the discussion is apropos Aristotle, *De anima* II.8, 420a 3–4.

[25] *De anima* II.8, 420b 16–22.

[26] *De an.* 381.22–382.3. Ammonius, *De int.*, at CAG IV:4, ed. A. Busse (Berlin, 1897), 24.33–25.6 gives a much briefer description of the organs of speech in referring to the views of οἱ ἰατροί (24.33).

[27] At 381.22–26 Philoponus distinguishes between ἡ φάρυγξ, pharynx proper, and ὁ φάρυγξ, or the larynx. I have not established a Galenic antecedent for this distinction in gender. From V. Nutton's note on Galen, *On Prognosis*, 5 XIV.628K, at CMG V, 8, 1, on p. 96.27–98.4, I would suspect that there is none.

[28] See "Galenic Medical Ideas," 118–20. To the reference there add Philop. *De an.* 119.33–34, where the liver is identified as τὸ τοῦ αἵματος ἐργαστήριον.

[29] *De aet. mund.* 396.27–397.2 Rabe. Cf. also note 58 below.

[30] *De an.* 19.8–11. The closest parallel is Galen, *De Plac. Hippocr. et Plat*, I. 6, V.186K (= Galen, *Doctrines* [ed. De Lacy], 78.33 to 80.3). Cf. also *De loc. affect.* IV.3, VIII.232K, or II.10, VIII.128K. On this instrument see Puschmann at *Alexander*, I, 534, note 1.

[31] *De an.* 19.11–15.

[32] Cf. *De loc. affect.*, III.14, VIII.290K; and *Anat. adm.*, VIII.9, II.696–698K. (Singer, *Procedures*, 221–22).

[33] I omit discussion of passages showing knowledge of the anatomy and process of hearing and smelling; e.g., 364.15–32 (cf. 353.32–33), 433.32–33.

[34] Note especially the gloss on τὸ ἐπὶ τῇ κόρῃ δέρμα (Aristot., *De an.* II.8, 420a 14–15) at Philop., *De an.* 368.1–3: ἢ καὶ ἁπλούστερον κόρην ἀκουστέον κατὰ τὸ σύνηθες αὐτὸ τὸ τρῆμα τοῦ ῥαγοειδοῦς, τὸ δὲ ἐπὶ ταύτῃ δέρμα τὸν κερατοειδῆ . . . χιτῶνα. Cf. also Simplic., *De an.* 144.29. For the humors mentioned see e.g., 336.34–35 (κρυσταλλοειδές) and 350.24–33 (on the relation between the κρυσταλλοειδές and ὑοειδές).

[35] *De an.* 336.33–35; cf. 337.13–16, 350.24–26.

[36] Thus at *De Plac. Hippocr. et Plat.* VII.5, V.623K (= Galen, *Doctrines* [ed. DeLacy], 460.2–3) Galen refers to the air becoming an ὄργανον πρὸς τὴν τῶν αἰσθητῶν οἰκείαν διάγνωσιν. Philoponus claims that the ὀπτικὸν πνεῦμα at the lens causes the κρίσις τῶν ὁρατῶν (350.25–26). Also note the denial of the extramission of πνεύματα at 339.4–5.

follows Aristotle in rejecting in favor of the view that light is the actualization of the transparent medium, and that vision occurs when the eye encounters such incorporeal actualizations.[37] The Galenic account is thus limited to the internal mechanism of vision, while the external situation is explained in Aristotelian terms. Apparently a similar compromise was reached by the later commentators, Averroes and Albertus Magnus, who shared Philoponus' knowledge of Galenic principles and used it in a similarly eclectic effort to maintain Aristotelian orthodoxy.[38]

Philoponus also spends considerable effort on refuting the view for which, as far as I know, there is no precedent, that when a "congealed fluid" (χυμὸς συνιστάμενος) on the surface of the eye is perceived as being outside it, then vision must be occurring by the extramission of πνεύματα that project this obstruction.[39] He argues *inter alia* that this effect is just analogous to vision through a colored mirror,[40] and reasons that such rheums are themselves visible because there is a medium within the eye between the lens and the cornea outside which the rheum is formed.[41] Now while there may be a parallel in Galen for the pathological case involved here,[42] there is no indication that he used it to defend the extramission theory of vision. Again, while Galen's theory of vision in *De Placitis Hippocratis et Platonis* Book VII certainly includes criticism of the Aristotelian position defended by Philoponus, this commentator cannot be responding directly to that earlier discussion.[43]

Finally we must look at the internal senses, as they were known in medieval psychological theory. The division of these into the imaginative, the ratiocinative, and the commemorative, and their location in respectively the front ventricles, the middle ventricle, and the back ventricle of the brain, is a doctrine that Galen hints at rather than specifies.[44] Like the theory of three pneumata, it soon became part of an established Galenism and is codified in Nemesius of Emesa's *De natura hominis*.[45] In one passage Philoponus speaks of the sympathetic interaction between these ventricles, and the location of the memory in the back ventricle.[46] For the full system though, we have to turn to a passage in Sophonias' paraphrase of his commentary on *De an-*

[37] This is developed in a lengthy note on Aristotle, *De an.* II.7, 418b 9–10 at 324.25–342.16. The passage at 325.6–326.37 deals specifically with the emission of light rays. The whole subject of Philoponus' theory of light has recently been dealt with in detail by J. A. Christensen, "Aristotle and Philoponus on Light," (Diss., Harvard, 1979). The aspect of Philoponus' account noted here is, it should be stressed, one part of a larger picture developed in this thesis. I am grateful to Dr. Christensen for letting me see a copy of her thesis.

[38] See *Averroes: Epitome of Parva Naturalia*, trans. H. Blumberg (Cambridge, Mass., 1961), 18. For Albertus see the discussion in D. C. Lindberg, *Theories of Vision from Al-Kindi to Kepler* (Chicago/London, 1976), 105. On the rejection of Galen's theory of vision see also Temkin, *Galenism*, 122 with note 73.

[39] *De an.* 336.3–339.16. This χυμός is clearly a sore of some kind. Cf. 350.20–21 where ὑπόχυμα (a term that can mean "cataract") is used interchangeably with ὁ συνεστὼς χυμός. For συνίστασθαι meaning "to be compact" see LSJ, *s.v.* συνίστημι, B.V.

[40] See *De an.* 338.8–339.16, at 338.20–24. A series of other examples follows.

[41] *De an.* 350.24–351.7 apropos Aristotle, *De an.* II.7, 419a 11–13, where it is said that a colored object placed on the organ of vision eliminates sight because the intervening transparency is eliminated. On this same topic it is worth noting that at *De an.* 292.19–20 Philoponus says that we do not perceive our own sense organs because there is no intervening air: διὸ τῆς λήμης ἐν τῷ ὀφθαλμῷ οὔσης οὐκ ἀντιλαμβανόμεθα. The apparatus criticus shows λήμης to be written in an erasure by a second hand, while μίλης is found in another manscript. We can, I suggest, correct the latter case of iatism to μήλης, and accept it as the true reading partly in the light of the parallel at Olympiodorus, *Comm. on Phaedo* 4.7.7–8 Westerink. He refers to sense perception being defective because it recognizes only objects at a distance and adds: ἐπεὶ τὸν πυρῆνα τῆς μῆλς τὸν ἐν τῷ ὀφθαλμῷ οὐχ ὁρᾶ, καὶ ἡ ἀφὴ δὲ διὰ μέσου ἀέρος ἀντιλαμβάνεται. This is essentially the Aristotelian context in which Philoponus' point is made; cf. *De an.* 419a 20, and Philop. *De an.* 219.19. In another context I think that μήλη should probably be read at *De an.* 351.10, 15, 25, 27, 38. N.b. 351.25 where the reference to a ὑελίνη λήμη (a glass sore!) can hardly be plausible. Equally, doubt is now thrown on the reading λήμη in the discussion at 415.38–416.16.

[42] E.g., in the discussion of trachoma at *De compositione medicamentorum secundum locos*, IV.2, XII.709–711K, there is a reference to such a rheum. (I owe this reference to Emilie Savage-Smith.) But at *De Plac. Hippocr. et Plat.* VII.4, V.635–636K (Galen, *Doctrines* [ed. DeLacy], p. 468.2–6) cataracts are described as blocking optical pneuma; this presupposes extramission, and does not prove it.

[43] Thus Galen argues (1) that Aristotle cannot explain how we recognize the position, size, or distance of a perceived object (VII.7, V.637–639K [Galen, *Doctrines* (ed. DeLacy), pp. 470.17–472.2]), and (2) that he in fact invokes a theory of extramission in the explanation of rainbows (VII.7, V.639–641K [*Doctrines* (DeLacy), p. 472.3–24]). The latter must be a reference to Aristotle, *Meteorologica* III.3–4 (cf. especially 373b 33). Regarding (1) Philoponus deals only with the question of vision at a distance, and that only with reference to the general theory of vision by extramission and not to the case of πνεύματα; see *De an.* 334.30–336.3. As for (2), Aristotle is defended at 333.19–35 on the ground that he used this explanation as a hypothesis, but again the point is made in an entirely general context.

[44] *De sympt. diff.*, at VII.56K where the division into φανταστικόν, διανοητικόν, and μνημονευτικόν is found. Memory is associated with the back ventricle at *De loc. affect.*, III.9, VIII.173–175K.

[45] *De nat. hom.* chap. 13, pp. 204–6 Matthaei; cf. chap. 6, p. 173 Matth., and chap. 12, p. 201 Matth. On the codification of the three Galenic "spirits" see O. Temkin, "On Galen's Pneumatology," *Gesnerus*, 8 (1951), 180–89 (= *Double Face of Janus*, chap. 9). It would be perhaps profitable to compare and contrast Nemesius' and Philoponus' use of Galenic ideas in the search for the elusive Galenism available to non-medical authors in later antiquity.

[46] *De an.* 155.27–31.

ima III.3, a section that admittedly has no parallel in the medieval Latin translation as an additional control, but which can be fairly confidently attributed to Philoponus.[47]

In considering the senses and the sub-faculties located in the brain we have moved to the limits of a survey of purely anatomical and physiological material, and are entering the wider field of the general theory of the soul. For if the brain is the central organ of the body, then its faculties must in some way define the soul. We have so far said nothing about Philoponus' theory of the soul, nor about its possible affect on his assimilation of medical material. That will be our concern next as we bring his neoplatonism into the picture.

III. Philoponus, Neoplatonism, and Medical Ideas

We can best approach this issue through Galen's own reflections about the status of pneuma in the brain. He remarks in the *De Placitis Hippocratis et Platonis* that if the soul is incorporeal "the pneuma is, so to speak, its first home (πρῶτον οἰκτήριον)," but if it is corporeal it is identical with the pneuma.[48] And in a related passage he describes the relation between the incorporeal soul and the pneuma as one in which the latter was its "first vehicle (πρῶτον ὄχημα)."[49] Galen himself may have vacillated about the nature of the soul,[50] though in the *De Placitis* he opts for the position that the pneuma was its ὄργανον and that the soul itself was located not in the ventricles but "in the actual body of the brain."[51] We however need only emphasize that his account of the status of the incorporeal soul in relation to pneuma schematizes the theory found elaborated in later neoplatonic psychology,[52] a theory that affects the way in which medical ideas are assimilated.

The account in question, as expounded in the proem to Philoponus' commentary, envisages the soul as preexisting and descending to a temporary sojourn in the physical body. In this descent the rational soul is complemented by the faculties of the irrational soul—sensation, thumos, and desire; these are said to inhere in a substrate, pneuma, that serves as their vehicle (ὄχημα) in their descent into a body that will have the vegetative functions that will complete the hierarchy of souls in a living human being.[53] The sources of this theory and its various elaborations need not concern us.[54] We need only note that the three faculties of the irrational soul are also involved, respectively, in the operation of the organs of brain, heart, and liver, that we have been discussing. But they are said to have a unity and identity independent of the body, and this is expressed through a concept, pneuma, that can also be used to explain the various psychical functions of the body. What is the relation between these two roles?

Our question is not formally raised. We do, however, encounter one passage in which both roles of pneuma are acknowledged.[55] Here Philoponus argues that the removal of cataracts shows that the faculty of perception is not itself a body that can be affected by organic changes because "it has its being not in our physical body but in the pneuma" (the pneumatic substrate of the irrational soul, that is).[56] But he goes on to illustrate this by referring to the deterioration in the humors and tunics of the eyes of old people; this, he says, blocks access to the optical pneuma without the actual faculty of perception being affected.[57] The faculty itself is then an incorporeal (an unaffected) aspect of the pneumatic substrate, while the operations of the faculty can involve sensory pneuma. The two accounts are

[47] Sophon., *De an.* 117.23–30. On the value of Sophonias in reconstructing Philoponus see S. Van Riet, "Fragments de l'original grec du 'de Intellectu' de Philopon dans une compilation de Sophonias," *Revue Philosophique de Louvain*, 63 (1965), 5–40.

[48] *De Plac. Hippocr. Plat.* VII.3, V.602K (= Galen, *Doctrines* [ed. DeLacy], pp. 442.36–444.2).

[49] *De Plac. Hippocr. Plat.* VII.7, V.644K (= Galen, *Doctrines* [ed. DeLacy], p. 474.26).

[50] For a recent discussion see P. Moraux, "Galien et Aristote," in *Images of Man in Ancient and Medieval Thought: Studia G. Verbeke . . . dicata* (Louvain, 1976), 127–46 at 136–42.

[51] *De Plac. Hippocr. Plat.*, VII.3, V.602K (= Galen, *Doctrines* [ed. DeLacy], p. 444.4–6).

[52] This pasage is discussed in E. R. Dodds' discussion of the development of this theory at *Proclus: The Elements of Theology*, 2nd ed. (Oxford, 1963), Appendix II, 316–17.

[53] Cf. *De an.* 5.29–33 for the acquisition of the irrational soul in γένεσις. Also, note 18.15–16, and 52.4–7 for the acquisition of πάθη in the descent of the soul into the physical body. For pneuma as the substrate and vehicle of the irrational soul see 17.19–23. On the vegetative soul being inseparable from the physical body see 16.26–17.19.

[54] In addition to Dodd's discussion cited in note 52 above see A. Smith, *Porphyry's Place in the Neoplatonic Tradition* (The Hague, 1974), 152–58. This story is often presented as that of the three "tunics," or vehicles of the soul, since in addition to the pneuma and the physical body, the soul also has a "luminous vehicle" that survives purification after death and is indestructible. The latter aspect is touched on by Philoponus at *De an.* 18.22–33.

[55] *De an.* 161.3–27 à propos Aristotle, *De an.* 408b 20–22 where in the context of a discussion of whether the intellect itself decays, reference is made to the fact that an old man would have the vision of a young man if he acquired a new eye.

[56] *De an.* 161.18–21.

[57] *De an.* 161.21–27.

set at different levels, and this presumably explains why metaphysics and medicine can be combined in this commentary.[58]

There are, however, passages in which the unity of the three faculties of the irrational soul in pneuma does place constraints on the implications of certain medical evidence. We mentioned above that the relation of the brain to the lower organs was in one place established with reference to certain clinical and pathological data (the application of the μηνιγγοφύλαξ, etc.).[59] In a subsequent passage this evidence is recapitulated,[60] but the commentator stresses that it does not prove that the three faculties are spatially separate. In neoplatonic terminology, the different organs in which they are located are differently suited for illumination by the faculties, but there is a continuity between them because those faculties are "related to the pneuma just as the vegetative faculties are to the tree, and they completely pervade pneuma."[61] In this way the wider psychological theory establishes a framework within which the medical evidence can be exploited in ways that we have already observed. This position does, however, create an ambivalence about certain passages. For example, Philoponus describes φαντασία as being "in the pneuma,"[62] and refers to pneuma as "the primary organ and vehicle of the senses."[63] In another place it is said to be "the common sense-organ of all the senses" because the common sense is located in it.[64] In such cases the unifying role of pneuma as a substrate overlaps with its functional role in the explanation of sensation and no real distinction can be drawn between the two.

It is worth adding that this particular combination of medicine and metaphysics may have evolved in response to another neoplatonic version of the relation between the pneumatic vehicle and the body. Philoponus cites, and criticizes, an account (of which versions can be found in Proclus and Porphyry) to the effect that embodied pneuma risks pollution by a bad diet, and that the result of this would be a posthumous existence as a ghost around one's tomb.[65] This theory held no attraction for Philoponus. Among his criticisms is this dilemma.[66] Either those upholding this view must deny that the soul is distributed in the organs of the body (διωργανεῖσθαι), in which case the soul will not be the ἐντελέχεια of an organic body, as Aristotle had claimed, or they must grant that the soul is distributed in this way, and thus divided along with the parts of the body (i.e., the faculties are physically separate). Now we have seen that Philoponus rejects the latter option because of the basic unity of the faculties of the irrational soul in the pneuma. On the other hand he did think that there was a relation between those faculties and different organs, both on the evidence of medical data and in the light of the neoplatonic theory of illuminations from above. This position of compromise has to exclude the theory of pneuma as a substance in a condition often metaphorically described as one of threatened pollution by the body, "weighed down" or "nourished by material vapors" as Porphyry and Proclus put it. Part of the reason for Philoponus' position undoubtedly lies in the fact that he saw the relation between pneuma and the organic body in the neutral terms of medical theory, where an analysis of function excluded any moralizing notion of the pollution of the soul by the body.[67]

[58] At *De an.* 64.6–17 there is related support for this point. The discussion turns on the relation between θυμός and the body; θυμός is said to be in reason and τὸ πνεῦμα, but reason moves desire by means of pneuma, while pneuma moves the blood around the heart by means of desire. The basic physiology here may be Aristotelian rather than Galenic, but there is also a dual role assigned to the pneuma, as the substrate of a psychic faculty (cf. 64.14–15, where it is said to be separable from the physical body) and also as an agent in the operation of that faculty.

[59] Above, Part II, with note 28.

[60] *De an.* 201.1–15 apropos 411b 19–20, a query about the unity of the soul, given that plants and certain insects survive when divided.

[61] *De an.* 201.19–32. The translation is of 201.31–32.

[62] *De an.* 158.15–20; cf. Simplicius, *De an.* 214.4, 216.26–27. Cf. also Philop., 194.28–195.10 for a similar point about Plato's account of the organic distribution of the faculties in the *Timaeus*; there, however, there is no reference to the pneuma.

[63] *De an.* 162.14–15.

[64] *De an.* 433.34–35; cf. 438.34–35.

[65] *De an.* 19.18–20.9. There are, very briefly put, two aspects to this account: (1) the claim that the pneuma is polluted by being "thickened" by a bad diet in that it is "nourished by breaths" (δι' ἀτμῶν, 19.25–26); and (2) the theory that such pollution can cause visibility. On (1) cf. Proclus, *In Tim.* III, 331.6–9 Diehl, and *In rempub.* I, 119.11 Kroll; and Prophyry, *De ant. nymph.* 64.9–21 Nauck. On (2) cf. Plato, *Phaedo* 81c-d, Porphyry, *De ant. nymph.* 64.15–21 Nauck, *Sententiae* 29, 18.10–13 Lamberz, and Proclus, *In rempub.* II, 156.25–157.8, and 164.19–27 Kroll. These references are merely intended to suggest a background for the theory attacked by Philoponus; its details deserve closer attention.

[66] *De an.* 239.15–38, in response to a restatement of the view described in the previous note at 239.2–15. The Aristotelian text on which the debate is based is 413b 13–16, where Aristotle asks whether the faculties of the soul are themselves souls, or parts of the soul, and whether they are theoretically or physically separable.

[67] The view that θυμός and ἐπιθυμία are associated with the soul after death, and are involved in its purification, is developed at *De an.* 18.10–22 but in rather abstract terms.

Finally let us briefly note that neoplatonic psychology also conditions Philoponus' rejection of a Galenic doctrine that we mentioned earlier, the doctors' view "that the faculties of the soul follow the temperaments of the body."[68] I have considered elsewhere the exegetical context of this passage.[69] Here we shall see that the notion of the preexistent soul is a decisive consideration in his critique.[70] The commentator thus argues that the separable rational soul can oppose the dictates of the body; this means that mental conflict can occur, and that we can be said to act freely.[71] As for the πάθη of the soul, these are said to be an endowment of the soul "as it descends to creation;" they have, that is, pneuma as their substrate prior to embodiment, and although the κρᾶσις of the physical body may be a necessary condition for their embodiment they cannot be identified with it, or with any "product" (ἀποτέλεσμα) of it, as the medical theory envisages.[72] In neoplatonic language, the forms of the πάθη of the soul are engendered by "creative reasons" (δημιουργικοὶ λόγοι) in a "suitable blend of the elements."[73] This metaphysical superiority is emphasized finally by the claim that to deny the πάθη this status would be to make the worse (the κρᾶσις) the cause of the better, or something inanimate the cause of life, a line of criticism used elsewhere against the general theory, also attributed to "the doctors," that the soul is a κρᾶσις of the elements.[74]

A diametrical opposition emerges here between the medical explanation of the soul from matter "upwards," as a κρᾶσις of the elements, and the philosophical analysis of the soul's preexistence and metaphysical independence from the body. In this confrontation there is little sign that Philoponus has penetrated much beyond the title of the relevant Galenic treatise. He does claim that the doctors themselves admit that with the help of philosophy temperament may be resisted,[75] and this could be a reflection of Galen's own attempt in chapter 11 of the *Quod animi mores* to mitigate the deterministic implications of his general position. But otherwise Philoponus has invoked a Galenic principle as the occasion for the restatement of the first principles of his psychological theory. The contribution of medicine is relegated to defining the κρᾶσις of the elements; thereafter the philosopher takes over, and sets this factual data in its appropriate philosophical context. Here, as in all the examples that we have surveyed, medical material is firmly controlled by philosophical principles.

To conclude: the use of medical ideas represents only a minor aspect of Philoponus' exegetical output, yet its importance in his commentary on the *De anima* lies in the fact, noted at the outset, that it has no equal in the ancient and Byzantine Aristotelian tradition, not even when commentaries were written on medically more suggestive Aristotelian treatises. I have not, as I warned and explained earlier, been able to establish a clear historical context for my evidence. I hope though that something has been achieved by demonstrating that this early Byzantine commentary on Aristotle's *De anima*, whatever its precise antecedents, is a minor but noteworthy episode in the long history of the interaction between philosophy and medicine, as well as further evidence of the importance of the Philoponan corpus for the history of science in late antiquity.[76]

University of British Columbia

[68] See Part I, with note 18 above.

[69] See "Galenic Medical Ideas," 124–26.

[70] For an antecedent of Philoponus' critique see Proclus, *In Tim.* III, 349.21–350.8 Diehl.

[71] *De an.* 52.1–4.

[72] *De an.* 52.4–13. Cf. Philop., *De gen. et corr.* 164.4–19 for this argument against "the doctors'" theory of mixture. Cf. my paper "Some Concepts" (cited in note 2 above), 164.

[73] *De an.* 52.13–21. See "Some Concepts," 162–64 on this type of argument.

[74] *De an.* 52.22–25. Cf. *De an.* 35.27–30 for a similar argument against the general theory that the soul is a κρᾶσις. That theory is identified in an introductory doxography at *De an.* 9.21–35, and attributed to "the doctors" at 33.2. For an identification of the Galenic theory of the soul in these terms on the basis of the treatise *Quod animi mores corporis temperamenta sequantur* see Nemesius, *De nat. hom.* chap. 2, p. 86 Matth.

[75] *De an.* 51.29–34.

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